DOCUMENT RESUME

ED 118 563 SP 009 859

AUTHOR Presbie, Robert J.; Brown, Paul L.
TITLE Behavior Modification. What Research Says to the Teacher.
INSTITUTION National Education Association, Washington, D.C.
PUB DATE 76
NOTE 39p.
AVAILABLE FROM NEA Publications, Order Department, The Academic Building, Saw Mill Road, West Haven, Connecticut 06516 (Stock no. 1035-3-00; no price quoted)

EDRS PRICE MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS *Behavior Change; Behavior Patterns; *Change Strategies; *Changing Attitudes; Elementary Secondary Education; Punishment; *Reinforcement; Reinforcers; Social Reinforcement; Student Behavior

ABSTRACT

This report reviews some of the most relevant findings from the extensive research which has been done on behavior modification. It summarizes the more important, practical, concrete, and classroom-tested procedures which research shows to be effective in improving students' academic and social behaviors. The first section of the report begins by stating that a more descriptive name for the behavioral approach is behavior improvement. Next is an explanation of how consequences may be used to improve classroom behaviors. Reinforcement and pubishment are discussed, as are ways to change and improve academic and social behaviors. The next section talks about the methodology of using behavior modification procedures. It contains information on pinpointing behaviors and counting and charting behaviors. Behavior modification change procedures are the topic of the third section. Discussed in this section are change procedures, modeling as a change procedure, social reinforcement procedures, activity reinforcement procedures, token reinforcement procedures, and punishment procedures. The final section suggests ways in which the reader might learn more about behavior modification. The report also contains a list of 100 selected references. (RC)

**********
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
**********

What Research Says to the Teacher

FEB 25 1976

# Behavior Modification

by Robert J. Presbie/Paul L. Brown

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL BY MICROFICHE ONLY HAS BEEN GRANTED BY

NEA

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER.

ED118563

SP009 859

A National Education Association Publication

What Research Says to the Teacher

# Behavior Modification

by **Robert J. Presbie**
**Paul L. Brown**

National Education Association
Washington, D.C.

## SPECIAL NOTICE

The subject of behavior modification has been a controversial one from its inception. Many NEA members believe that the means of controlling learning and, in particular, disruptive behavior implicit in the behavior modification approach run counter to the humanistic goals of education, and that they merely add to the already onerous burden of paperwork. In general, then, the posture of NEA toward behavior modification has been one of non-endorsement. On the other hand, many classroom teachers are interested in the subject and want as much information as possible about it. With these conditions in mind, we present this research report by two advocates and practitioners of behavior modification. The introduction by Dr. Bernard McKenna of the NEA Instruction and Professional Development staff states some of the arguments against the approach. It is our hope that the two statements together will help readers toward a balanced view of the behavior modification method of classroom management.

Copyright © 1976
National Education Association of the United States

**Stock No. 1035-3-00**

Library of Congress Cataloging in Publication Data

Presbie, Robert J.
Behavior modification.

(What research says to the teacher)
Bibliography: p.
1. Classroom management. 2. Behavior modification. I. Brown, Paul L., 1942- joint author. II. Title. III. Series.
LB3011.P73 371.1'02 75-22489
ISBN 0-8106-1035-3

# CONTENTS

INTRODUCTION BY BERNARD McKENNA ..... 5

PREFACE ..... 8

BEHAVIOR MODIFICATION = BEHAVIOR IMPROVEMENT 9
- Using Consequences to Improve Classroom Behaviors ..... 10
- Ways to Change and Improve Academic and Social Behaviors 13

METHODOLOGY OF USING BEHAVIOR MODIFICATION PROCEDURES ..... 14
- Pinpointing Behaviors ..... 14
- Counting and Charting Behaviors ..... 15

BEHAVIOR MODIFICATION CHANGE PROCEDURES ..... 18
- Antecedents as Change Procedures ..... 18
- Modeling as a Change Procedure ..... 19
- Social Reinforcement Procedures ..... 19
- Activity Reinforcement Procedures ..... 22
- Token Reinforcement Procedures ..... 23
- Punishment Procedures ..... 24

LEARNING MORE ABOUT BEHAVIOR MODIFICATION ... 28

SELECTED REFERENCES ..... 29

Robert J. Presbie and Paul L. Brown are both members of the Department of Psychology at the State University of New York, College at New Paltz.

The manuscript was reviewed by Jean Blachford, elementary classroom teacher, New Brunswick (N.J.) Public Schools; Christopher J. Gregory, Elementary Supervisor, Silver Lake Regional School District, Massachusetts; and Patricia A. Gregory, fourth-grade teacher, Cedar School, Hanover, Massachusetts.

# INTRODUCTION

by Bernard McKenna

According to one definition education is characterized by results that produce change in behavior. Acceptance of such a definition would make education and behavior modification near synonymous—at least in the literal interpretation of the term. In this context behavior modification is, in its broadest sense, constructive and appealing. And what constitutes appropriate procedures for modifying behaviors is also appealing as defined by authors Presbie and Brown: "Behavior modification techniques are simply effective and positive teaching procedures."

That's all to the good. And it should prompt those who pick up this report to take it seriously in assessing the promise of behavior modification for providing positive and effective teaching procedures to bring about appropriate change in student behavior.

There are some questions the reader will want to ask and some considerations he or she might well bear in mind—guidelines if you will—as the body of the report is pursued.

A first question is, "What are the appropriate changes in behavior which schooling should aspire to bring about?" This is a question of goals and eventually of objectives. And while the authors acknowledge that issues surrounding this question should be a consideration, they don't expand very much on its importance and implications for the movement.

Since behavior modification becomes operative through techniques which have important potential for substantially influencing and/or shaping objectives for school, it needs to be viewed in that light. And since objectives need to reflect the broader goals, both need to be considered in a kind of gestalt. There is the additional consideration that the process of education itself is important and should be, in as much as possible, a microcosm of physically and emotionally healthful and democratic procedures, which reflects the best of what might be expected in the broader society. The authors have drawn citations from what they call application to academic learning and the affective areas. An example from the latter may be helpful for the purposes of illustration. If a purpose of behavior modification is to "increase the occurrence of behaviors," then there must be the assumption that it is desirable for particular behaviors to recur frequently in students. Assume for the moment that a behavior modification procedure in the affective domain addresses itself to increasing the

behavior of being quiet. Obviously for some educational purposes this may be a desirable behavior. And for some students in particular, situations that achieve greater recurrence of such a behavior are also probably desirable. But there is more to it than that.

It quickly becomes a matter of degree of quietness, when, and for what purposes. If the behavior of being quiet is increased to a high level in some students, is there not a risk of a resulting docility—even a reluctance to become involved in those group process activities so important to some learnings? Also, if as the authors suggest, students who are in close proximity to the student(s) to whom the modification activity is addressed emulate the behavior, is it possible that other overly reticent and docile students will become even more so?

One can hardly overemphasize the importance of positive reinforcement as an instructional technique, and the reader will want to linger over the authors' points on this. Whether founded in the ageless saying about catching more flies with honey than vinegar or in the findings of sophisticated and carefully controlled psychological studies, positive support has an important place in instruction. But the real world isn't all positive and constructive, nor is it all logical and systematic. Neither are the great range of ways in which human beings respond to life situations. Does this make behaviorism's dependence on logical and tightly structured methodologies less than generalizable? If the large amount of rhetoric, considerable body of literature, and some useful research on the individualization and personalization of instruction have taught us anything, it is that different students have different learning styles—styles that require a broad repetoire of teaching strategies. The question will need to be asked if there are students for whom behavior modification as a means of bringing about change is an anathema. Teachers need to be able to diagnose individual learning difficulties and to prescribe procedures that respond to individual idiosyncratic learning styles. To do this they need to understand students as individuals. This brings one to consider the conditions under which such understanding can be achieved.

Obviously, a teacher with 30 or 35 students for which he/she must provide instruction in several branches of the curriculum for only a few hours each day, or in a single subject for only 40 or 50 minutes, will have little opportunity to come to know them very well as individuals. So where behavior modification is applied to affective areas such as classroom deportment, the question needs to be asked, "Is it possible that the teaching tasks can become oppressive, if not unmanageable in large and

heterogenous groups?" Take, for example, the heterogenous class of thirty, a large percentage of whom have social and emotional problems that manifest themselves by frequent instances of serious disruption. Will a teacher in such a setting be hard put to count and record behaviors let alone provide the appropriate amount of reinforcement, be it social, token or whatever? Since considerable success with behavior modification has been reported from special education groups where class sizes are ordinarily much below those of the typical classroom, the potential usefulness of a number of its procedures in large and heterogenous classes needs to be considered by those who read this report and who teach groups of conventional size.

Other things readers will want to bear in mind:

- The importance of achieving a balance between mechanical procedures that "keep the lid on" in terms of social behavior, and understanding and diagnosis of individual anti-social behavior in terms of its root causes
- The viability of some procedures in terms of the real world of the classroom, e.g., the use of a time to determine precisely the length of reinforcement or punishment procedures
- The line of demarcation between punishment and restraining procedures and the importance of applying each one, or neither, on the basis of knowing children well enough as individuals in order to have some idea how they are likely to respond to particular procedures
- The diagnosing of and prescribing for individual learning and social problems, compared to treating symptoms through techniques that may result in conditional behaviors which may limit future flexibility, growth, and creativity.

In the final analysis the processes recommended in this report will need to be considered in terms of their applicability to various goals and objectives for schooling and on the basis of what value is placed on the process of education itself as compared to outcomes. While these will differ from place to place, there are some over-arching principles that are likely to be important in most situations—principles such as individualization, humanization, and attention to creativity. To expect behavior modification to respond to such principles meaningfully does not seem to this writer an inordinate mandate. Almost all teaching procedures might be expected to do the same.

# PREFACE

Research on behavior modification in the classroom in the last ten years has resulted in the development of very effective, efficient, and positive procedures for teaching academic and social skills (88).* This has been achieved by researchers leaving their laboratories, spending time in the classroom during the regular school day, and directly observing and experimenting on the interactions between teachers and students (3). These direct observations and classroom experiments have produced very extensive findings which can be applied to classrooms.

Because this is real-life research, it does not require any complicated extrapolations from theory to practice. Once a teacher is aware of the relevant research findings of other teachers' successes and also learns about the technicalities of using such techniques, she/he can then apply the very same procedures in her/his own classroom (27). In studying the techniques of behavioral modification, teachers should also talk to and observe teachers who are using behavioral procedures.

Behavior modification research has been widely summarized in many research reports and books (5,27,62,73,80,89). The procedures have been used from nursery school (1), through high school (15), in special education settings of all kinds (44), in open classrooms (96), the library (39), the lunchroom (77), and on the school bus (75).

An infinite number of behaviors have been improved with these techniques, including such academic ones as homework (4), reading (47), composition (10), such social behaviors as increased question-asking (47), social interactions (64), or decreased talking-out (6,14), excessive arguing (33), and truancy (15). They have also been used to improve pole vaulting (11), swimming (76), drawing (30), and auto pedestrian safety behavior (80). Parents, too, are using the procedures at home to help their children in their schoolwork (4,31,84). Counselors, school psychologists (15,21,48), and social workers (85), as well as principals (25), and many other school personnel are applying behavior modification procedures. Students are also using them to improve their own behaviors (14,94), those of other students (29,73,80), and even their teachers' behaviors (26).

*Numbers in parentheses appearing in the text refer to Selected References beginning on p. 29.

Due to the time lag involved for educational research to filter down to the classroom, educational practitioners and newly graduated teachers have had very little or perhaps no direct training or experience in the application of these findings (although this is rapidly changing). This state of affairs has resulted in many misconceptions, as well as in a lack of factual information about the behavioral approach to education (22,63,97).

This report reviews some of the most relevant findings from the extensive research which has been done thus far (73,80). It summarizes the more important, practical concrete, and classroom-tested procedures which research shows to be effective in improving students' academic and social behaviors.

## BEHAVIOR MODIFICATION = BEHAVIOR IMPROVEMENT

The newness of the behavioral approach has resulted in a great deal of confusion about the meaning of the term behavior modification. Behavior modification techniques are simply effective and positive teaching procedures. It is difficult to change a name and the meaning associated with it, but a better and more descriptive name for the behavioral approach is behavior improvement. These positive teaching procedures are best indicated by the title of the old song, "Accentuate the Positive."

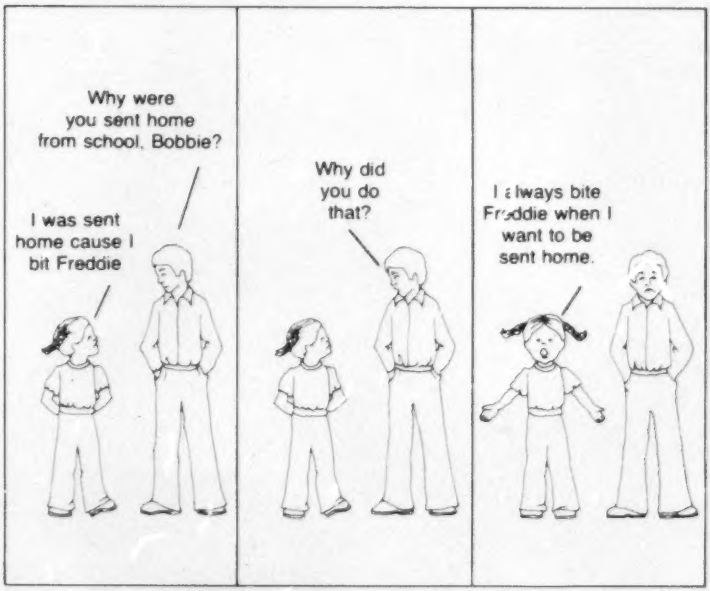
The behavior modification research done within the last four or five years has experimentally determined what makes successful teachers successful and other teachers less successful. These findings are now being used by many teachers to spare them the problems of re-inventing the wheel when they first begin teaching (35).

What then does research on behavior modification offer to education? Those engaged in the behavioral analysis of classroom teaching (3,9,81) offer the following:

1. Extensive research findings directly applicable to teachers (88)
2. A set of behavioral principles and procedures usable for both academic and social behaviors which can be applied by all school personnel, by students themselves, and by their parents (89)
3. Objective and accountable positive teaching procedures which facilitate effective communication and successful cooperative implementation among all members of the educational community (9,86).

## Using Consequences to Improve Classroom Behaviors

Technically, behavior modification is the application of operant conditioning principles to change and improve behaviors. Operant conditioning is a long-established area of research concerned primarily with how consequences or events that follow behaviors affect the behaviors in the future. What happens following a behavior is perhaps its most important determinant. Laboratory research in this area is quite extensive, but the systematic study of how consequences affect what children and adults do in everyday life, at school and at home, is very new. Consider the following cartoon:


Why were you sent home from school, Bobbie?
I was sent home cause I bit Freddie
Why did you do that?
I always bite Freddie when I want to be sent home.

Why did Bobbie bite Freddie? Although typical interpretations might include speculations about home problems, hostility, or immaturities, Bobbie did it because of the consequences which followed her biting

behavior. She learned what consequences would occur when she bit someone, and once home she could do the things she liked to do. Unintentionally, Bobbie had been reinforced for biting.

## *Reinforcement*

Reinforcement is defined as "any event following a behavior which increases the occurrence of the behavior in the future." Being sent home followed Bobbie's biting, increased the biting, and thus was a reinforcement. Think of the last time you hugged someone. What happened after you put your arms around her/him? Did she/he put her/his arms around you, and hug you in return? Could it have been a reinforcement for you? What do you think would happen to your hugging if she/he never again hugged in return?

The most important kind of reinforcing consequences for schoolchildren are various aspects of the social behaviors of teachers (1,31,45,57). This includes praises, criticism, pats on the head, nods, frowns, smiles, and other forms of attention. Of course, other kinds of consequences are also important, such as free time, prizes, and special privileges. Consider the following table:

SOME EXAMPLES OF CONSEQUENCES
WHICH MAY FUNCTION AS REINFORCEMENTS

| *Behavior* | *Consequence* | *Effect on Behavior* | *What is it?* |
|---|---|---|---|
| biting Freddie | sent home | increases biting | reinforcement |
| finishing homework | leave school early | increases homework | reinforcement |
| reading | tokens | increases reading | reinforcement |
| playing with children | praise | increases playing | reinforcement |
| standing up | sit-down | increases standing | reinforcement |
| reversing digits | talk about errors | increases reversals | reinforcement |

Research has shown that leaving school early can increase homework (36), tokens given for reading can increase reading (84), and praise for playing can increase the sociability of brain-damaged children (31). Research has also shown that certain reinforcing consequences can pro-

duce problems for both student and teacher. Increasing sit-down commands to children who are standing up, actually resulted in more children standing up (56). The teachers' sit-down commands were thus functioning as a reinforcement for standing-up behavior. A recent study has even shown that too much attention paid to errors when correcting digit reversals in math can increase the number of reversals (37). Criticizing children for either social or academic mistakes may reinforce these undesirable behaviors.

By definition, a reinforcement must work in order to be called one. It must increase the frequency of a behavior in the future. If a teacher says, "I praise Mary all the time, *I'm reinforcing her*, but she doesn't do her math," the teacher isn't describing the situation correctly. The child is being praised, but if the praise doesn't increase the math output it isn't a reinforcement for that child at that time. Just labelling something a reinforcement, or a punishment for that matter, isn't enough. What counts is what actually takes place when the teacher uses a particular consequence following some behavior.

Regardless of the consequence, if the behavior it follows increases in the future, it is a reinforcement. If the behavior does not increase, then that consequence isn't a reinforcement. A knowledge of this single fact takes a lot of the mystery out of many common school successes and failures and is very helpful to teachers (1,69,87).

## *Punishment*

Punishment is defined as "any event following a behavior which decreases the occurrence of the behavior in the future." The effect a consequence has on a behavior determines whether or not it is a punishment, not what a teacher thinks a punishment is or should be. A teacher may say that she/he is punishing children by sending them to the principal's office for swearing or by keeping them inside during recess for making silly math errors. Are those consequences punishments? It depends. If the children do not reduce their swearing or careless math errors, then neither consequence is a punishment. They are consequences, but they are not effective in assisting the teacher to accomplish her/his goal.

Any kind of a consequence may function as a punishment. Knowing this in regard to both punishment and reinforcement is very helpful to teachers. Consider the table on the next page.

SOME EXAMPLES OF CONSEQUENCES
WHICH MAY FUNCTION AS PUNISHMENTS

| *Behavior* | *Consequence* | *Effect on Behavior* | *What is it?* |
|---|---|---|---|
| talking-out | self-recording of talking | decreased talk-outs | punishment |
| hitting | sitting in chair for 2 min | decreased hitting | punishment |
| getting out of seat | turning off music | decreased out-of-seats | punishment |
| criticizing students | student opens door | decreased criticizing | punishment |

Having a child keep a record of her/his talk-outs can decrease talking out (14), hitting followed immediately each time by two minutes of quiet chair sitting can decrease hitting both in school (82,93) and at home (90), and turning off music from a portable tape player following out-of-seat behavior can decrease this dangerous behavior while riding a school bus (75).

The above examples illustrate that almost any consequence can function as a punishment. All that matters is that it decrease a behavior in the future.

## Ways to Change and Improve Academic and Social Behaviors

There are many goals and behavioral objectives which teachers may want their students to achieve. From a behavior modification point of view, there are only three behavioral decisions one can make about a student's behavior:

1. We are not satisfied with a behavior and want to increase the behavior in some way. We may want more homework completed (36), higher class spelling scores (53), more questions asked (47), better reading comprehension (47), or more social interactions among pupils (64).
2. We are not satisfied with a behavior and want to decrease the behavior in some way. We may want less talking-out (33,60), less out-of-seat (41,99), less hitting (16), fewer digit reversals (37), or less fantasy play (82).

3. We are satisfied with a behavior and decide to leave it alone. Being satisfied with a child's classroom participation or reading, we continue to interact with her/him as usual.

Any attempt to improve a student's behavior involves either increasing or decreasing the behavior in some way. In the case of artistic or creative behaviors, various qualitative aspects of the behavior can be involved (30). In many instances a teacher may want to decrease one behavior while simultaneously increasing another, for example, decreasing standing-up and increasing sitting (56).

Behaviors teachers want to increase are commonly considered to be desirable academic and social behaviors. Most behaviors that they want students to decrease are labeled classroom management or discipline problems, the three most common of which are talking-out, out-of-seat, and hitting. Academic errors of various kinds are also behaviors teachers would like to decrease.

What behaviors students should exhibit, and which should be increased or decreased, are the responsibility of each teacher and her/his school system. But once behavioral goals are established, behavior modification techniques can be used as positive teaching procedures to achieve these goals effectively.

## METHODOLOGY OF USING BEHAVIOR MODIFICATION PROCEDURES

Using behavior modification procedures amounts to the teacher's doing applied research while she/he is teaching (3). Regardless of the setting, age of the student, or type of behaviors, a basic set of steps is followed in each case:

1. Pinpoint the behavior (describe it objectively).
2. Record and chart the behavior (count it and keep a visual record).
3. Change the environment (introduce consequences, etc.).
4. Try, try again (re-arrange the environment if not successful in a week).

### Pinpointing Behaviors

Because behavioral procedures deal with observable behaviors and events, "What you see, is what you get!" Describing behaviors so that

they are pinpointed means that anyone given a pinpointed description of a behavior can see and count the behavior in the particular situation in which it is occurring. Look at the table below:

EXAMPLES OF NON-POINTED AND PINPOINTED BEHAVIORS

| *Non-Pointed Behaviors* | *Pinpointed Behaviors* |
|---|---|
| immaturity | talking-out during Social Studies |
| learning disability | writing b's for d's during composition |
| poor discipline | carrying out less than 100% of requests |
| insecure | sucking thumb during free playtime |

As you can see, describing a child as immature, or in other general ways, does not allow anyone to count the behavior in question. But describing what a child does so that the behavior can be seen, allows one to count it. Adequately pinpointing a behavior allows all concerned to communicate better about it and in some instances may even be sufficient to resolve problems, once it is out in the open (18,91).

## Counting and Charting Behaviors

Keeping good records before and during the time one is doing a behavior improvement project is very important, just as keeping good temperature charts and other records is important in the practice of medicine. Good records tell the teacher whether or not the procedures are working. Objective counts and records of what a child is doing in chart form show at a glance exactly what's happening.

There are various ways of counting any behavior of concern to a teacher. Behaviors such as hitting, talking-out, getting out-of-seat can be counted as they are occurring. They should be counted in the situation where they occur most often (reading, free study-time). One-half hour per day is usually sufficient for counting a behavior, but if it occurs very infrequently (five or ten times a day), then it can easily be counted all day long.

If a teacher is concerned about a child's putting objects away, the teacher would count the total number of objects played with that are returned and then calculate the percentage of the total it represents. For a child who doesn't follow verbal requests a teacher can give her/him ten requests of various kinds each day. The number complied with is the

percentage of requests followed. A number of sources (8,17,18,94) discuss ways to count and chart behaviors.

Keeping charts while doing behavior modification is absolutely essential. Such pictures are literally worth one thousand words, as they will help both teachers and students to actually see behavior improvements as they are occurring. The following hypothetical behavior chart will show you the importance of keeping good charts:

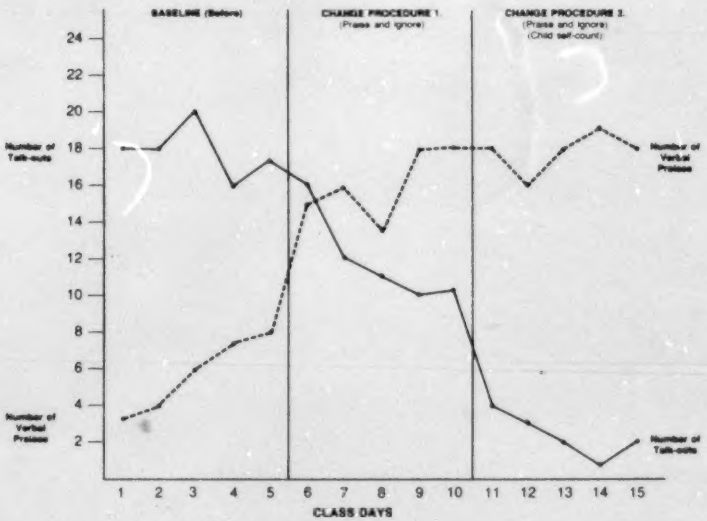



**Fig. 1.** Behavior chart of talking-out of a single child along with teacher's rate of verbal praise. Each behavior counted for one-half hour per day. Effects of praise-and-ignore procedures shown under "Change Procedure 1." Addition of child self-counting procedure shown under "Change Procedure 2."

This behavior chart shows a child's talk-outs counted during a thirty-minute period each day. The teacher's self-count of verbal praises given to any child during another class period is also shown. Before beginning the project, talk-outs and verbal praises were counted and charted for one week. This week of "before" or "baseline" counting provides a basis of comparison to evaluate the effectiveness of the procedure a teacher will later use.

Notice that the last two days of this count show the student's talk-outs beginning to decrease. This phenomenon is not unusual. Counting and charting behaviors forces a teacher to become very aware of what is happening. This alone results many times in teachers' changing their interactions with students in ways which improve their students' behaviors. This awareness is also reflected in the self-count of the teacher's praise as it was also changing and increasing. This, too, is not unusual.

During the first change period a variety of tactics were used to increase verbal praise and to be more positive—both to the child who was talking out and to the whole class. The chart shows the praise rate rising quickly, and talk-outs decreasing rather slowly each day. Because the talk-outs weren't changing very rapidly, a teacher could easily be misled about the child's improvement if objective records were not kept. The record, however, graphically shows continual daily improvement. Without such a record a teacher would have only subjective ideas about what was happening and might easily have given up prematurely. Conversely, she/he might continue to use a procedure which an objective record would show to be ineffective.

Because of the slow decrease in talk-outs during the first week, the teacher added another approach. The second procedure involved the child's keeping a record on a 3″ × 5″ card every time she/he talked out, along with the teacher continuing to praise her/him and others. This resulted in the talk-outs immediately decreasing. The self-counting functioned as a punishment because it decreased the talking-out.

Such self-modification procedures by students themselves are effective with all age groups and are especially useful at the junior high and high school levels. Books and materials on self-control procedures are readily available for counselors and others for use with students (17,28,48,94,95).

Keeping daily counts and charts of behaviors and giving students daily positive feedback on their progress is perhaps the most important aspect of using behavior modification procedures successfully. Those who claim to have tried behavioral procedures without success have invariably failed to pinpoint, count, chart, or provide students adequately with constant daily feedback on their progress (49).

Research also indicates that a general tactic that should be used with any behavior improvement project is to involve students as much as possible in helping to determine goals and criteria of acceptable behavior (52). A generalization from the mass of published research is that the

more one objectifies what one is doing, the more one keeps and shares records with all involved, gives daily positive feedback, and makes cooperative decisions concerning behavioral goals and reinforcements, the more successful one will be (80).

## BEHAVIOR MODIFICATION CHANGE PROCEDURES

There are a variety of behavioral techniques to improve behaviors. In general, one can do this by simply changing antecedents and/or consequences of behaviors. This report is primarily concerned with research on how to use consequences effectively. It should be noted, however, that antecedents are also very important.

### Antecedents as Change Procedures

Instructional materials are important examples of antecedents for behaviors. Behaviorally oriented research is very much concerned with improving such materials. Hard chairs, long assignments, and peer influences, such as a teasing child, are some of the everyday antecedents which may set off behaviors in various ways.

Teachers have been using antecedents (cues, prompts, or helping aides) when they tie ribbons around a child's hand to teach "left" and "right." Putting a big mark on a child's right hand and then giving lots of practice assures that the child will always be correct. Gradually fading the size of the mark each day by making it smaller and smaller eventually allows a child to respond correctly in the absence of this helping cue. Of course, one should always compliment the child on her/his good performance during this time. In this case a teacher would be using a combination of antecedents and consequences to improve a behavior. ABC's (antecedents, behaviors, consequences) are equally important for teachers and their students (8,21,54,76).

In some instances using antecedents can accidentally produce classroom discipline problems. One research study showed that when teachers increased the loudness of their verbal reprimands, students became noisier and more disruptive. When they reprimanded softly, the students become less disruptive (69).

## Modeling as a Change Procedure

Research demonstrates that setting a good example is very important in teaching almost any desirable behavior. Similarly, setting a bad example can inadvertently teach less desirable behaviors (5). The fact that loud reprimands can increase yelling and other disruptive behaviors shows that what a teacher does and models is imitated directly by students.

Children readily imitate other children, and this can be used to good advantage by teachers. Students at adjacent desks increase their studying when the child next to them is praised for studying (12). Having a withdrawn child see a film of children interacting socially is a very good way of helping such a child be more sociable (64).

When a teacher intentionally models the appropriate use of descriptive djectives, Head Start students learn to use the adjectives very quickly 50). A teacher who reads aloud in an open classroom reading center is far ..ore successful in getting children there to look at books than the one who merely enriches the environment by setting out a variety of different books each day (38). These and similar research findings can be profitably incorporated into anyone's teaching.

## Social Reinforcement Procedures

Watching students with their own teachers, substitute teachers, and special-area teachers invariably shows that they behave differently with each of them. The same thing is seen at home but perhaps more dramatically. Children may be very well behaved with baby sitters or grandparents but may instantly become problems when they leave and their parents come home. These kinds of anecdotal observations suggest strongly that the social interactions these adults provide for children are somehow important in determining the children's behaviors. Careful research findings at schools and at home come to the same conclusion.

The most important and universally applicable behavior improvement procedure involves the use of social reinforcement. Teachers can use their own behaviors (praising, complimenting, smiling) as consequences for improving the behaviors of children. The evidence demonstrating the effectiveness of social reinforcement procedures is overwhelming (1,16,34,56,60,87).

Research with literally thousands of teachers (57) has shown the crucial importance of a teacher's social consequences in improving

students' behaviors. Verbal praise is the key to the problem, and the general prescription for both teachers and parents is to catch the child being good. Catching students being good and praising their behaviors (while keeping verbal criticisms low) is effective for both social and academic behaviors. This works from nursery school (1) through high school (60). Just about any behavior imaginable has been substantially improved by teachers increasing their verbal praise rate (5,27,73,80). It works for the principal, too, when she/he enters a classroom and praises students' behaviors or has them sent to her/his office for being good and praises them there (24). By praising their teachers when they talk pleasantly to them, students can affect their teachers' behaviors (26). Praise also works with parents at home (31,90).

Discipline is a very crucial problem, especially for first-year teachers. Research has demonstrated some of the important aspects of good classroom management which can be successfully utilized by first-year or experienced teachers. The relative effectiveness of classroom rules, ignoring inappropriate behaviors, and praise for appropriate behaviors has been analyzed in a number of recent studies. Rules alone are very ineffective. Constantly repeating them without doing anything else will lead to failure. Merely ignoring unwanted behaviors without doing something else is also ineffective. The important aspect of good classroom control is verbally praising students for appropriate behaviors while simultaneously ignoring inappropriate ones (55,67). When teachers are taught how to praise and ignore effectively, students' behaviors improve significantly—whether they are nursery schoolchildren (1,16), from impoverished backgrounds (34), middle class schools (87), or in special education classes (44).

To assess the validity of their findings researchers have had teachers try to make their classrooms go out of control. When verbal criticisms are made to exceed verbal praises, classes go out of control. The study concerned with sit-down commands is a very dramatic example of this. More students stood up when the teachers increased their sit-down commands, thus actually socially reinforcing standing up. When they reduced the sit-down commands, fewer students stood up. When they reduced the sit-down commands all the way to zero (ignore those standing up) while simultaneously catching other students being good and praising them for sitting, fewer children were standing up than ever before (56). In another demonstration by researchers, a teacher who had excellent classroom control (many more praises than criticisms) became more critical

than positive, and then the classroom went out of control. When the situation was reversed, and the teacher began to accentuate the positive again, control was reestablished (87).

Recent research has also shown that teacher criticisms can have detrimental effects on academic performance. Talking to children about the digit reversals they make increases these academic errors (37). This and other research leads one to wonder what effects marking papers by putting big X's through errors is having on students' errors. Wouldn't it be better to put big C's through the correct answers and leave the incorrect ones alone? Research suggests so (80).

Minimize the criticize and raise the praise is the lesson research teaches us. Teachers can do this to the advantage of both their students, and themselves, by incorporating the following combination of techniques in their teaching:

1. Keep a daily count and chart of verbal praises to individual children (not group praise) for one half-hour per day, preferably during an academic period. Increase the praise to at least one time every two minutes on the average (15 per half-hour, 30 per hour, 150-180 per day) (18).
2. Praise students about equally. Casual observation will show that many children do not receive their fair share of praise and attention. In lower grades children can keep count of their teacher's praises on cards on their desks. A teacher can see at a glance how equitably attention is being given out during the day. For older children, keeping notes of this on a seating plan gives the teacher similar useful feedback (18,58,78).
3. Praise the student's behaviors as well as the student. Mentioning the behavior one is praising, e.g., "good blending of the blues and greens," is more effective than general praise, e.g., "nice drawing" (30,80).
4. Ignore inappropriate behavior. Rather than make a fuss if a child does something annoying (unless dangerous or disruptive to the class), find another child being good and praise that child. Knowing the effects praise and criticism can have on children's behaviors, the choice a teacher should make in such a situation is clear (37,55,56).
5. Maintain a 5:1 praise-criticism ratio. After criticizing someone a teacher should find at least five different students behaving appro-

priately and praise each of them before allowing her/himself to criticize anyone again. This will automatically help to produce a positive atmosphere in the classroom and also help to insure that more individual students are being praised. A teacher will invariably criticize every now and then, but keeping a 5:1 ratio, criticizing in an atmosphere of praise, insures success (18,57).

6. When criticizing, criticize softly and directly to the individual involved. Do this by going over to the student, not yelling from across the room (69).

Research shows that non-verbal social consequences such as smiles, pats on the back, etc., are also effective social reinforcements (45). These invariably accompany verbal praises and should, of course, be used as much as possible.

## Activity Reinforcement Procedures

Sometimes a teacher's social consequences may work slowly or may not be effective at all (13). Then other kinds of consequences can be used along with the teacher's verbal comments (44,59,62). Grandmother had a rule, "Eat your spinach, and then you can go out and play." Parents and teachers also do this when they tell children they can play after they do homework, math, or whatever. Behavioral research shows that engaging in pleasurable activities as a consequence for doing less pleasurable ones can increase these lesser preferred behaviors.

A classic demonstration of this was conducted in a nursery school where the children were running wildly around the room. What did the teacher want them to do? Sit. What did the children like to do? Run! The children were told, "If you sit for a little while, then you can run." It worked. Then the teacher gradually shaped up their sitting (little steps for little feet) by having them sit for longer and longer periods doing their classwork before they could run again (41).

One very effective and easily implemented activity which has been used as a reinforcing consequence is merely letting students have free time. Printing and writing can be increased by following it with free time (42), as can math, social studies (36), and sitting and working (72). When free time for a whole class depends on their spelling, the spelling improves (53). Parents can provide various home activities for good behavior notes sent home by teachers, and this can improve their schoolwork (4).

Actual written contracts are very useful for older children and high school students. Students enjoy them very much because they allow each party to negotiate about outcomes which are mutually agreeable. The contracts note the pinpointed behavior to be improved, and the consequences to be received for specific amounts of improvement. Such contingency contracts can help to reduce truancy in high school (15) and can improve many other behaviors (94). A recent book details how to construct and use such written contracts (28).

Watching what students do in their free time, or directly asking them what they would like to do, are two simple ways of finding out what possible activities can be used as consequences for their behaviors. As with any kind of behavior modification procedure, it's necessary to keep good counts and charts of progress and share them with all involved. The rule with activity reinforcement, then, is business before pleasure.

## Token Reinforcement Procedures

When properly used, token reinforcement or token economy procedures are very effective with either individuals or a whole class (68). They have been used in regular classrooms (58,61), with retarded (44,62) and autistic children (59), high school students (13,15), and by parents (4,84). They can improve social (66) and academic behaviors—reading (98), math (98), composition (10), writing (61), and others (73,80).

Before using token procedures teachers should be very well versed in the ABC's of the behavioral approach (92). There are many instances where someone has tried to implement a large-scale token economy with minimal training or knowledge of pinpointing, record keeping, social reinforcement, etc., and has failed (49).

There are many decisions to make in using a token economy. The most important are deciding on what kind of tokens to use, what behaviors will receive tokens, what back-up reinforcements will be provided, and what the exchange rate will be. Problems of various kinds invariably occur, such as token stealing, or some children acquiring too many or too few tokens. In such cases the economy hasn't been structured correctly. Because of these and other problems good daily records of how tokens are earned and spent must be kept. A weekly review of what happened must be made and appropriate changes promptly made (92).

The back-up reinforcement tokens are exchanged for anything a child might desire, even such things as reading stories to others or tutoring

someone in math. In such cases a child would be helping others to learn as a reinforcement for improving her/his own behavior (29,80). Material objects such as comic books and toys are especially useful in special education classes. A public price list or reinforcement menu of what is available, and the prices, should also be used. When students help to determine the economy, it has been shown to be more successful (52).

A common misconception about using token reinforcement procedures is that children never stop working for tokens. This is not so. When used properly token systems are programmed with the intent of weaning students from them as fast as is practically feasible. By constantly using social reinforcements along with tokens, a transition is made from the tokens to one where students only receive the teacher's social reinforcements (68,92). A very common concern about using tokens is that it amounts to bribing children, and that they should be learning for the sake of learning. Consider one dictionary definition of bribing, which states that it amounts to receiving "money or favors for doing something illegal or immoral," is it bribery to use tokens to help children who can't read, to read, or to help teach special education students mathematics? An excellent discussion of this and other similar issues concerning the use of token economies should be consulted by teachers concerned with such questions (71).

A teacher considering using tokens, or any other behavioral procedure for that matter, should be aware of the principle of least intervention. This principle states that one should intervene as little as possible, using the simplest procedure available (88). Except in exceptional instances, one should always use social reinforcements first to improve behaviors. If they work, fine, but if they don't, more powerful procedures can then be implemented.

## Punishment Procedures

When students engage in behaviors which seriously interfere with their own learning or that of others, teachers will want to decrease these behaviors quickly. Although the general behavioral approach is one of catching the child being good while ignoring inappropriate behaviors, there are instances when one cannot and should not ignore certain behaviors. Several circumstances justify trying to reduce a child's behavior quickly, rather than ignoring it. There are no questions about using punishment procedures when a behavior is dangerous to a child her/

himself, or others, and there should be little disagreement when a student's behavior seriously interferes with her/his own learning and/or adequate social interactions, or with that of others.

Constant swearing, loud tantrums, destroying class materials, and other similar behaviors are ones which teachers want to decrease quickly while simultaneously replacing them with more adaptive academic and social behaviors. When a teacher decides that a behavior is dangerous or excessively disruptive she/he should consider using one of a variety of available punishment procedures.

Although students may be suspended from school or be made to write their names on the blackboard 100 times as punishments, these and similar consequences may not actually decrease a student's inappropriate behaviors. Additionally, such tactics can have very adverse side effects for children, as they deny them the opportunity to learn and can be publicly embarrassing for them. Knowing that a punishment can be any consequence following a behavior which decreases that behavior in the future, teachers are faced with the problem of which sort of consequence to use when they want to decrease a behavior quickly. A reasonable rationale for selecting such possible punishment consequences would be procedures which do not involve ostracizing or embarrassing a child, make her/him and teachers unduly emotional, and have as few other adverse side effects as possible. Behavioral punishment procedures attempt to fulfill these criteria.

Contrary to popular belief, punishment procedures are used in the behavioral approach, but when used properly, only when necessary, and always when simultaneously accentuating the positive with adaptively incompatible behaviors. Extensive research has shown how to use such procedures effectively in the classroom (5,70,80). There are some simple yet effective punishment procedures which involve having a student count her/his own behaviors, having a count of them shown to her/him, and other similar kinds of feedback. In many of these instances the behaviors may quickly decrease, the feedback functioning as a punishment (14,18,80). Such simple procedures are easy to use and can be effective with a variety of behaviors.

A time-out procedure has been found to be very effective for many very disruptive behaviors such as excessive fantasy play (82), hitting (83), and doing the opposite of what one is asked to do (90). In such situations a child is invariably receiving reinforcing consequences from teachers or peers for fantasy behavior, hitting, or whatever. This procedure involves

removing the child temporarily from this environment. Whenever the child engages in the inappropriate behavior, a warning is given to stop. If the child does not stop immediately, she/he is made to sit in a chair removed from others for a short period of time (only two minutes has been found to be successful). As soon as the time is up (which can be regulated by a portable kitchen timer), the child returns to the group. When this is done consistently (100 percent of the time), and immediately after each occurrence of the behavior, it very quickly and effectively reduces the behavior. Time-out can even be used with groups of children on a school bus, when music for the whole group that is being played on a portable tape player is turned off whenever anyone gets out of her/his seat (75).

Another effective and very versatile punishment procedure is known as response cost, a fining technique. Response cost procedures work well with any behavior and have few if any adverse side effects when used properly (43). This procedure can be used with either single children (27,32,99) or entire classes (6,51,79). It is especially useful and recommended when a teacher is faced with a group of children or a whole class which is severely disruptive, and where merely praising and ignoring cannot ever be expected to bring the group back into control.

Before using a response cost procedure, it is very important to obtain a good baseline of the frequency of the behavior over several days. Then the individual or class is offered some sort of activity or privilege for free, extra gym time, first for lunch, less of a homework assignment, or whatever else may be desired within the realm of possibility. The consequence should always be something in addition to what is usually received in the classroom. One does not want to, nor does one need to, take away things children usually receive and expect to receive. This can only cause problems. Knowing what the average frequency of the behavior was during the baseline period, the teacher would then tell the individual or class that if the behavior is kept below a particular level (for example, 50 percent of what it was during baseline on the average, for the first day, 50 class talk-outs, rather than 100), then the consequence selected would be provided.

The individuals involved should either count the inappropriate behaviors as they are occurring or have someone else do it for the individual or group in a way that it can be seen. When doing this with an individual student, she/he can have numbers written on a piece of paper she/he can carry around and can cross out a number for each inappropriate behavior as it occurs. For a class, this can be kept on the board, and each

occurrence of it can result in one of the numbers being crossed out. The advantage of this kind of public counting for those concerned is that it makes everyone involved very aware of what is happening: constant feedback is provided as each behavior occurs; the limits of acceptable behavior can always be seen, and one can constantly see how close one is to approaching this unacceptable level of behavior. When used with a group of children or a whole class, peer pressure begins to be used in positive ways as students actively monitor each other's behaviors.

If too stringent a behavioral goal is made for children, they will fail to obtain their selected consequence. One must then be very careful to structure such a situation so that the individual or group involved always has a very good change of behavior and actually wins. If they do not, then what the teacher is doing has to be reassessed so that the children do win. After the first day a cooperative agreement should be made between the parties involved to lower the limit of unacceptable behavior little by little each day until an acceptable level is finally reached. As with time-out and other punishment procedures, a teacher should always be using social reinforcement while similtaneously building up appropriate academic and social behaviors. Teachers and others oftentimes go wrong when trying to use consequences to decrease behaviors because when the children are being good they may leave well enough alone. Sometimes they may hold grudges towards a child after she/he exhibits some inappropriate behavior, and ignore the child for the rest of the day or even for a week or more. Behavioral studies teach us that we should never hold grudges and should always be accentuating the positive.

Two important rules to follow when using punishment procedures are to use the procedure consistently and to do so immediately. Additionally one must not get upset when doing so and should not criticize, raise one's voice, or sermonize, as these social consequences can reinforce the very behavior one wants to decrease. Teachers would be well advised to learn first-hand about using these procedures by observing someone else using them successfully, by reading appropriate research reports and texts, and by using available training materials. One such set of materials pictorially models exactly how to go about using punishment and other procedures (18). A very useful discussion of punishment which both teachers and parents find most illuminating and practical, and which all school personnel would do well to become acquainted with, is to be found in a recent book on how to use behavior modification procedures in school and at home (7).

# LEARNING MORE ABOUT BEHAVIOR MODIFICATION

The extensive research reports and books now available on behavior modification in the school make it quite difficult for anyone to be aware of them all or to easily select those which would best serve a particular purpose for them. Some of these sources of information will be of immediate practical interest and use to many different school personnel.

Research articles are found in a wide variety of professional journals, in addition to the standard ones in education. One of the most important journals publishing research on school applications of behavior modification is the *Journal of Applied Behavior Analysis*. *Behavior Therapy* and the *Journal of Behavior Therapy and Experimental Psychiatry* also have a number of articles of interest to school personnel. A journal of special interest to the practicing teacher is *SALT* (School Applications of Learning Theory), published by the Psychology Department of the University of West Virginia. It has short practical research articles of projects carried out by teachers around the country. A handy listing of bibliographies of books, articles on children in school and at home, films, and other topics on behavior modification can be consulted for extensive listings of available materials (46).

Perhaps one of the best detailed and systematic overviews of behavior modification in the schools is the recent yearbook of the National Society for the Study of Education (88). Several other books also give excellent summaries of recent and innovative work going on throughout the country (73,80,89). Many books have reprinted research articles. One has a selection of the classic ones which formed the basis for more recent work (70). Another one will be of special interest to teachers because it has many articles reprinted from the journal *SALT* (27). In addition to general texts dealing with behavior modification which teachers may want to consult (8,19,54), there are specialized ones dealing with the retarded (62) and speech problems (83). A most useful how-to-do-it book for teachers and parents is *Parents are Teachers* (7). This book discusses both principles of behavior modification and practical concrete procedures, and is widely used in teaching behavior modification to both parents and teachers.

College professors, school psychologists, counselors, and others concerned with teaching teachers about behavior modification should be aware of the extensive research which has been done on effective ways of

implementation (58,73,74,78,80,88). Providing teachers with feedback concerning how well they are using the procedures is very important (23,34,49), as is seeing to it that they are adequately praised for doing so correctly (25).

A number of excellent films are available for teacher training. One of them is *One Step at a Time*, which is distributed by CRM Films and is perhaps one of the better general introductions now available. CRM Films also has a number of other good films. The University of Kansas Audio-Visual Center has many excellent films dealing with both the regular and special class settings. Audio-visual training programs are also available. One of these is suitable for college classroom use, or in-service training (17). Another, in addition to classroom and in-service use, can be administered by principals, counselors, and school psychologists—or even used individually by the teachers themselves (18).

A good source of information on using behavioral procedures is to talk with or actually observe teachers who are using these procedures. By learning the ABC's of the behavioral approach and taking advantage of available training opportunities and materials, teachers can improve their teaching as well as their students' behaviors when they begin to put behavior modification research into practice.

## SELECTED REFERENCES


1. Allen, K. E. "What Teachers of Young Exceptional Children Can Do." *TEACHING Exceptional Children* 2: 119-27; 1972.
2. Ascare, D., and Axelrod, S. "Use of Behavior Modification Procedures in Four 'Open' Classrooms." *Psychology in the Schools* 10: 243-48; 1973.
3. Baer, D. M.; Wolf, M.; and Risley, T. R. "Some Current Dimensions of Applied Behavior Analysis." *Journal of Applied Behavior Analysis* 1: 91-97; 1968.
4. Bailey, J. S.; Wolf, M. M.; and Phillips, E. L. "Home-Based Reinforcement and the Modification of Pre-Delinquent Classroom Behavior." *Journal of Applied Behavior Analysis* 3:223-33; 1970.
5. Bandura, A. *Principles of Behavior Modification*. N.Y.: Holt, Rinehart and Winston, 1969. 677 pp.
6. Barrish, H. H.; Saunders, M.; and Wolf, M. M. "Good Behavior Game: Effects of Individual Contingencies for Group Consequences

on Disruptive Behavior in a Classroom." *Journal of Applied Behavior Analysis* 2: 119-24; 1969.

7. Becker, W. C. *Parents are Teachers*. Champaign, Ill.: Research Press, 1971. 200 pp.
8. Becker, W. C.; Engelmann, S.; and Thomas, D. R. *Teaching: A Course in Applied Psychology*. Chicago, Ill.: Science Research Associates, 1971. 499 pp.
9. Bijou, S. W. "What Psychology Has to Offer Education—Now!" *Journal of Applied Behavior Analysis* 3: 65-71; 1970.
10. Brigham, T. A.; Graubard, P. S.; and Stans, A. "Analysis of the Effects of Sequential Reinforcement Contingencies on Aspects of Composition." *J. of Applied Behavior Analysis* 5: 421-29; 1972.
11. Brock, S.; Brock, D.; and Willis, J. "The Effect of Tangible and Token Rewards on the Pole Vaulting Behavior of High School Students." *School Applications of Learning Theory* 4 (No. 3): 32-37; 1972.
12. Broden, M.; Bruce, D.; Mitchell, M.A.; Carter, V.; and Hall, R. V. "Effects of Teacher Attention on Attending Behavior of Two Boys at Adjacent Desks." *Journal of Applied Behavior Analysis* 3: 199-203; 1970.
13. Broden, M.; Hall, R. V.; Dunlap, A.; and Clark, R. "Effects of Teacher Attention and a Token Reinforcement System in a Junior High School Special Education Class." *Exceptional Children* 36: 341-49; 1970.
14. Broden, M.; Hall, R. V.; and Mitts, B. "The Effects of Self-Recording on the Classroom Behavior of Two Eighth-Grade Students." *Journal of Applied Behavior Analysis* 4: 191-99; 1971.
15. Brooks, B. D. "Contingency Management as a Means of Reducing School Truancy." *Education* 95: 206-11; 1975.
16. Brown, P. L., and Elliott, R. "Control of Aggression in a Nursery School Class." *Journal of Experimental Child Psychology* 2: 103-107; 1965.
17. Brown, P. L., and Presbie, R. J. *Behavior Modification Skills*. Hicksville, N.Y.: Research Media, 1974.
18. Buckhalter, G. A.; Presbie, R. J.; Brown, P. L. *Behavior Improvement Program*. Chicago: Science Research Associates, 1974.
19. Bushell, D., Jr. *Classroom Behavior: A Little Book for Teachers*.

Englewood Cliffs, N.J.: Prentice-Hall, 1973. 131 pp.

20. Busse, L. I., and Henderson, H. S. "Effects of Contingency Management upon Reading Achievement of Junior High Educable Mentally Retarded Students." *Education and Training of the Mentally Retarded* 7: 67-73; 1974.
21. Carlson, J. D., and Mayer, G. R. "Fading: A Behavioral Procedure to Increase Independent Behaviors." *The School Counselor* 18: 18: 193-97; 1971.
22. Cohen, S., and Hersh, R. "Behaviorism and Humanism: A Synthesis for Teacher Education." *The Journal of Teacher Education* 23: 172-76; 1972.
23. Cooper, M. L.; Thomson, C. L.; and Baer, D. M. "The Experimental Modification of Teacher Attending Behavior." *Journal of Applied Behavior Analysis* 3: 153-57; 1970.
24. Copeland, R. W.; Brown, R. E.; and Hall, R. V. "The Effects of Principal-Implemented Techniques on the Behavior of Pupils." *Journal of Applied Behavior Analysis* 7: 77-86; 1974.
25. Cossairt, A.; Hall, R. V.; and Hopkins, B. L. "The Effects of Experimenter's Instructions, Feedback, and Praise on Teacher Praise and Student Attending Behavior." *Journal of Applied Behavior Analysis* 6: 89-100; 1973.
26. Csapo, M. "Pupils as Intervention Agents in Modifying Teacher Behavior." *School Applications of Learning Theory* 4 (No. 4): 25-35; 1972.
27. Daniels, K., editor. *The Management of Childhood Behavior Problems in School and at Home*. Springfield, Ill.: C. C. Thomas, 1974. 456 pp.
28. DeRisi, W. J., and Butz, G. *Writing Behavioral Contracts: A Case Simulation Practice Manual*. Champaign, Ill.: Research Press, 1975. 87 pp.
29. Drabman, R., and Spitalnik, R. "Training a Retarded Child as a Behavioral Teaching Assistant." *Journal of Behavior Therapy and Experimental Psychiatry* 4: 269-72; 1973.
30. Fallon, M. P., and Goetz, E. M. "The Creative Teacher: Effects of Descriptive Social Reinforcement upon the Drawing Behavior of Three Preschool Children." *School Applications of Learning Theory* 7 (No. 2): 27-45; 1975.

31. Hall, R. V., and Broden, M. "Behavior Changes in Brain Injured Children Through Social Reinforcement." *Journal of Experimental Child Psychology* 5: 463-79; 1967.

32. Hall, R. V.; Cristler, C.; Cranston, S. S.; and Tucker, B. "Teachers and Parents as Researchers Using Multiple Baseline Designs." *Journal of Applied Behavior Analysis* 3: 247-55; 1970.

33. Hall, R. V.; Fox, R.; Willard, D.; Goldsmith, L.; Emerson, M.; Owen, M.; Davis, F.; and Porcia, E. "The Teacher as Observer and Experimenter in the Modification of Disputing and Talking-Out Behaviors." *Journal of Applied Behavior Analysis* 4: 141-49; 1971.

34. Hall, R. V.; Lund, D.; and Jackson, D. "Effects of Teacher Attention on Study Behavior." *Journal of Applied Behavior Analysis* 1: 1-12; 1968.

35. Hall, R. V.; Panyan, M.; Rabon, D.; and Broden, M. "Instructing Beginning Teachers in Reinforcement Procedures Which Improve Classroom Control." *Journal of Applied Behavior Analysis* 1: 315-22; 1968.

36. Harris, V. W., and Sherman, J. A. "Homework Assignments, Consequences, and Classroom Performance in Social Studies and Mathematics." *J. of Applied Behavior Analysis* 7: 505-19; 1974.

37. Hasazi, J. B., and Hasazi, S. E. "Effects of Teacher Attention on Digit-Reversal Behavior in an Elementary Schoolchild." *Journal of Applied Behavior Analysis* 5: 157-62; 1972.

38. Haskett, G. J., and Lenfestey, W. "Reading-Related Behavior in an Open Classroom: Effects of Novelty and Modeling on Preschoolers." *Journal of Applied Behavior Analysis* 7: 233-41; 1974.

39. Helfenbein, L., and Helyman, K. "A Modern Paradox: Behavior Modification in the Open Library." *School Library Journal* 9: 25-30; 1972.

40. Holland, C. J. "An Interview Guide for Behavioral Counseling with Parents." *Behavior Therapy* 1: 70-79; 1970.

41. Homme, L. E.; DeBaca, P. C.; Devine, J. V.; Steinhorst, R.; and Rickert, E. J. "Use of Premack Principle in Controlling the Behavior of Nursery Schoolchildren." *Journal of the Experimental Analysis of Behavior* 6: 544; 1963.

42. Hopkins, B. L.; Schutte, R. C.; and Garton, K. L. "The Effects of Access to a Playroom on the Rate and Quality of Printing and

Wr'.ng of First and Second-Grade S udents." *Journal of Applied Behavior Analysis* 4: 77-87; 1971.

43. Kazdin, A. E. "Response Cost: The Removal of Conditioned Reinforcers for Therapeutic Change." *Behavior Therapy* 3: 533-46; 1972.
44. Kazdin, A. E., and Craighead, W. E. "Behavior Modification in Special Education." *The First Review of Special Education*. (Edited by L. Man and D. A. Sabatino.) Philadelphia: JSE Press, 1973. Vol 2., pp. 51-102.
45. Kazdin, A. E., and Kock, J. "The Effect of Nonverbal Approval on Student Attentive Behavior." *Journal of Applied Behavior Analysis* 6: 643-54; 1973.
46. Klein, A. E. "Bibliographies on Behavior Modification: An Annotated Listing." *Behavior Therapy* 4: 592-98; 1973.
47. Knapczyk, D. R., and Livingston, G. "The Effects of Prompting Question-Asking upon On-Task Behavior and Reading Comprehension." *Journal of Applied Behavior Analysis* 7: 115-21; 1974.
48. Krumboltz, J. D., and Thoresen, C. E., editors. *Behavioral Counselling: Cases and Techniques*. N.Y.: Holt, Rinehart and Winston, 1969. 515 pp.
49. Kuypers, D. S.; Becker, W. C.; and O'Leary, D. D. "How to Make a Token System Fail." *Exceptional Children* 35: 101-109; 1968.
50. Lahey, B. B. "Modification of the Frequency of Descriptive Adjectives in the Speech of Head-Start Children through Modeling without Reinforcement." *J. of Applied Behavior Analysis* 4: 18-22; 1971.
51. Long, J. D., and Williams, R. L. "The Comparative Effectiveness of Group and Individually Contingent Free Time with Inner-City Junior High School Students." *Journal of Applied Behavior Analysis* 6: 465-74; 1973.
52. Lovitt, T. C., and Curtiss, K. A. "Academic Response Rate as a Function of Teacher-and Self-Imposed Contingencies." *Journal of Applied Behavior Analysis* 2: 49-53; 1969.
53. Lovitt, T. C.; Guppy, T. W.; and Blattner, J. E. "The Use of a Free-Time Contingency with Fourth Graders to Increase Spelling Accuracy." *Behavior Research and Therapy* 7: 151-56; 1969.
54. MacMillan, D. L. *Behavior Modification in Education*. N.Y.: Macmillan Co., 1973. 238 pp.

55. Madsen, C. H., Jr.; Becker, W. C.; and Thomas, D. R. "Rules, Praise, and Ignoring: Elements of Elementary Classroom Control." *Journal of Applied Behavior Analysis* 1: 139-50; 1968.

56. Madsen, C. H., Jr.; Becker, W. C.; Thomas, D. R.; Koser, L.; and Plager, E. "An Analysis of the Reinforcing Function of 'Sit-Down' Commands." *Readings in Educational Psychology*. (Edited by R. K. Parker.) Boston: Allyn and Bacon, 1968. pp. 265-78.

57. Madsen, C. H., Jr.; Madsen, C. K.; Saudargas, R. A.; Hammond, W. R.; Smith, J. B.; and Edgar, D. E. "Classroom RAID (Rules, Approval, Ignore, Disapproval): A Cooperative Approach for Professionals and Volunteers." *Journal of School Psychology* 8: 180-85; 1970.

58. Mandelker, A. V.; Brigham, T.A.; and Bushell, D., Jr. "The Effects of Token Procedures on a Teacher's Social Contracts with Her Students." *J. of Applied Behavior Analysis* 3: 1969-74; 1970.

59. Martin, G. L.; England, G.; Koprowy, E.; Kilgore, K.; and Pilek, V. "Operant Conditioning of Kindergarten Class Behavior in Autistic Children." *Behavior Research and Therapy* 6: 281-94; 1968.

60. McAllister, L.W.; Stachowiak, J. G.; Baer, D. M.; and Conderman, L. "The Application of Operant Conditioning Techniques in a Secondary School Classroom." *Journal of Applied Behavior Analysis* 2: 277-85; 1969.

61. Miller, K. L., and Schneider, R. "The Use of a Token System in a Project Head-Start." *Journal of Applied Behavior Analysis* 3: 213-20; 1970.

62. *Neisworth, J. T., and Smith, R. M. Modifying Retarded Behavior*. Boston: Houghton Mifflin, 1973. 220 pp.

63. Nolan, J. D. "The True Humanist: The Behavior Modifier." *Teachers College Record* 76: 335-43; 1974.

64. O'Connor, R. D. "Modification of Social Withdrawal Through Symbolic Modeling." *Journal of Applied Behavior Analysis* 2: 15-22; 1969.

65. O'Leary, K. D. "Behavior Modification in the Classroom: A Rejoinder to Winett and Winkler." *Journal of Applied Behavior Analysis* 5: 505-11; 1972.

66. O'Leary, K. D., and Becker, W. C. "Behavior Modification of an Adjustment Class: A Token Reinforcement Program." *Exceptional*

*Children* 33: 637-42; 1967.

67. O'Leary, K. D.; Becker, W. C.; Evans, M. B.; and Saudargas, R. A. "A Token Reinforcement Program in a Public School: A Replication and Systematic Analysis." *Journal of Applied Behavior Analysis* 2: 3-13; 1969.
68. O'Leary, K. D., and Drabman, R. "Token Reinforcement Programs in the Classroom: A Review." *Psychological Bulletin* 75: 379-98; 1971.
69. O'Leary, K. D.; Kaufman, F. F.; Kass, R. E.; and Drabman, R. S. "The Effects of Loud and Soft Reprimands on the Behavior of Disruptive Students." *Exceptional Children* 37: 145-55; 1970.
70. O'Leary, K. D., and O'Leary, S. G., editors. *Classroom Management: The Successful Use of Behavior Modification*. N.Y.: Pergamon, 1972. 664 pp.
71. O'Leary, K. D.; Poulos, R. W.; and Devine, V. T. "Tangible Reinforcers: Bonuses or Bribes?" *Journal of Consulting and Clinical Psychology* 38: 1-8; 1972.
72. Osborne, G. J. "Free-Time as Reinforcer in the Management of Classroom Behavior." *Journal of Applied Behavior Analysis* 2: 113-18; 1969.
73. Ramp, E., and Semb, G., editors. *Behavior Analysis: Areas of Research and Application*. Englewood Cliffs, N.J.: Prentice-Hall, 1975. 417 pp.
74. Ringer, V. M., Jr. "The Use of a 'Token' Helper in the Management of Classroom Behavior Problems in Teacher Training." *Journal of Applied Behavior Analysis* 6: 671-77; 1974.
75. Ritschl, C.; Mongrella, J.; and Presbie, R. J. "Group Time-Out from Rock and Roll Music and Out-of-Seat Behavior of Handicapped Children While Riding a School Bus." *Psychological Reports* 31: 967-73; 1972.
76. Rushall, B. S., and Siedentop, D. *The Development and Control of Behavior in Sport and Physical Education*. Philadelphia: Lea and Febiger, 1972. 238 pp.
77. Salzberg, B. H.; Hopkins, B. L.; Wheeler, A. J.; and Taylor, L. "Reduction of Kindergarten Children's Disruptive Behavior with Delayed Feedback and Delayed Contingent Access to Play." *Journal of School Psychology* 12: 24-30; 1974.

78. Sanders, R. M., and Hanson, P. J. "A Note on a Simple Procedure for Redistributing a Teacher's Student Contacts." *Journal of Applied Behavior Analysis* 4: 157-61; 1971.

79. Schmidt, G. W., and Ulrich, R. E. "Effects of Group-Contingent Events upon Classroom Noise." *Journal of Applied Behavior Analysis* 2: 171-79; 1969.

80. Semb, G., editor. *Behavior Analysis and Education–1972*. Lawrence: U. of Kansas, Dept. of Human Development, 1972. 415 pp.

81. Skinner, B. F. "Some Implications of Making Education More Efficient." *Behavior Modification in Education: The Seventy-Second Yearbook of the National Society for the Study of Education*. (Edited by C. E. Thoresen.) Chicago, Ill.: University of Chicago Press, 1973. pp. 446-56.

82. Sloane, H. N., Jr.; Johnston, M. K.; and Bijou, S. "Successive Modification of Aggressive Behavior and Aggressive Fantasy Play by Management of Contingencies." *Journal of Child Psychology and Psychiatry* 8: 217-26; 1967.

83. Sloane, H. N., Jr., and Macaulay, B. D., editors. *Operant Procedures in Remedial Speech and Language Training*. N.Y.: Houghton Mifflin, 1968. 444 pp.

84. Staats, A. W.; Minke, K.A.; and Butts, P. "A Token Reinforcement Remedial Reading Program Administered by Black Therapy Technicians to Problem Black Children." *Behavior Therapy* 1: 331-53; 1970.

85. Stuart, R. B. "Behavior Modification Techniques for the Education Technologist." *The School in the Community*. (Edited by R. Sarri and F. Maples.) Washington, D.C.: Nat. Assoc. Social Workers, 1973. pp. 88-135.

86. Tharp, R. G., and Wetzel, R. J. *Behavior Modification in the Natural Environment*. N.Y.: Academic Press, 1969. 236 pp.

87. Thomas, D. R.; Becker, W. C.; and Armstrong, M. "Production and Elimination of Disruptive Classroom Behavior by Systematically Varying Teacher's Behavior." *Journal of Applied Behavior Analysis* 1: 35-45; 1968.

88. Thoresen, C. E., editor. *Behavior Modification in Education: The Seventy-Second Yearbook of the National Society for the Study of Education. Part 1*. University of Chicago Press, 1973. 474 pp.

89. Ulrich, R.; Stachnik, T.; and Mabry, J. *Control of Human Behavior: Behavior Modification in Education*. Glenview, Ill.: Scott, Foresman, 1974.

90. Wahler, R. G. "Setting Generality: Some Specific and General Effects of Child Behavior Therapy." *Journal of Applied Behavior Analysis* 2: 239-46; 1969.

91. Wahler, R. G., and Cormier, W. H. "The Ecological Interview: A First Step in Out-Patient Child Behavior Therapy." *Journal of Behavior Therapy and Experimental Psychiatry* 1: 279-89; 1970.

92. Walker, H. M., and Buckley, N. K. *Token Reinforcement Techniques*. Eugene, Oregon: E-B Press, 1974. 225 pp.

93. Wasik, B. H.; Senn, R. H.; Welch, R. H.; and Cooper, B. R. "Behavior Modification with Culturally Deprived Schoolchildren: Two Case Studies." *Journal of Applied Behavior Analysis* 2: 181-94; 1969.

94. Watson, D. L., and Tharp, R. G. *Self-Directed Behavior: Self-Modification for Personal Adjustment*. Monterey, Calif.: Brooks/Cole, 1972. 264 pp.

95. Williams, R. L., and Long, J. D. *Toward a Self-Managed Life Style*. Boston: Houghton Mifflin, 1975. 235 pp.

96. Winett, R. A. "Behavior Modification in Open Education." *Journal of School Psychology* 11: 207-14; 1973.

97. Winett, R. A., and Winkler, R. C. "Current Behavior Modification in the Classroom: Be Still, Be Quiet, Be Docile." *Journal of Applied Behavior Analysis* 5: 499-504; 1972.

98. Wolf, M. M.; Giles, D. K.; and Hall, R. V. "Experiments with Token Reinforcement in a Remedial Classroom." *Behavior Research and Therapy* 6: 51-64; 1968.

99. Wolf, M. M.; Hanley, E. L.; King, L. A.; Lachowicz, J.; and Giles, D. K. "The Timer Game: A Variable Interval Contingency for the Management of Out-of-Seat Behavior." *Exceptional Children* 37: 113-17; 1970.

100. Zifferbaltt, S. M. *Improving Study and Homework Behaviors*. Champion, Ill.: Research Press, 1970. 96 pp.